# TECHNICAL REVIEW DOCUMENT for RENEWAL of OPERATING PERMIT 950PEP007

Colorado Springs Utilities – George Birdsall Power Plant

El Paso County Source ID 0410003

Prepared by Matthew S. Burgett, P.E. April 2009

# I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The original Operating Permit was issued June 5, 1997, with the first renewal issued April 1, 2002, and expired on March 31, 2007. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted March 31, 2006 and additional technical information submitted, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <a href="http://www.cdphe.state.co.us/ap/Titlev.html">http://www.cdphe.state.co.us/ap/Titlev.html</a>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

# II. Description of Source

This facility is classified under the Standard Industrial Classification code 4911. This facility, located at 213 Nichols Boulevard in Colorado Springs, CO, consists of three steam driven electrical generating units and the associated equipment

(turbine-generators, and cooling towers). The Birdsall Power Plant requires approximately ten hours between startup and full power delivery to the grid. Additionally, it is among the most costly power supplies in the region. It is operated as a backup baseload unit, typically when there is a projected multi-day failure of transmission or power generation resources. Boiler operating durations vary considerably. A typical month will have zero to two startups followed by one to five days of operation. The steam generators fire natural gas, No. 2 distillate fuel oil, and a mixture of No. 1 and No. 2 distillate fuel oil. Natural gas must be used to startup the units. The fuel oil or fuel oil mixtures are used as backup fuels in the event of a natural gas curtailment and are test-fired annually. There is also an auxiliary heating boiler used for building heat.

The electrical generating unit boilers had the following start-up dates:

<u>Unit</u>	MW Rating	<u>Year</u>
B001	18.5	1953
B002	18.5	1954
B003	24	1957

This plant is located in Colorado Springs, Colorado. The area in which the plant operates is classified as attainment/maintenance for carbon monoxide (CO), and attainment for all other criteria pollutants. There are no affected states within 50 miles of the plant. There are no Federal Class I designated areas within 100 kilometers of the facility. Florissant Fossil Beds National Monument is a Federal land area within 100 kilometers of the facility. Florissant Fossil Beds has been designated by the State to have the same sulfur dioxide increment as a Federal Class I area.

Based on information supplied by the permit applicant, the facility is not subject to the requirements of Section 112(r)(7), the Accidental Release Plan Program of the Clean Air Act. None of the electrical generating units are subject to the requirements of Title IV, the Acid Rain Program.

Colorado Construction Permits were not required prior to 1972. Because the various units are considered "grandfathered" from existing Construction Permit requirements (Colorado Regulation No. 3, Part B, Section I.A.), there are few applicable requirements. The units have no limits for most pollutants. However, the actual emissions must be calculated for fee and inventory purposes.

This source is considered to be a major source for nitrogen oxides (NOx), sulfur dioxides (SO<sub>2</sub>) and carbon monoxide (CO) in an attainment area (Potential to Emit > 250 Tons Per Year) but was constructed prior to the creation of the Prevention of Significant Deterioration (PSD) regulations on December 5, 1974, and the adoption of the current regulation on August 7, 1980.

In general, equipment (including boilers burning fossil fuel containing sulfur) are subject to the Colorado Regulation No. 1 and No. 6 standards for SO<sub>2</sub>. All

subject equipment was installed prior to the applicability date (January 30, 1979) for the Regulation No. 6 SO<sub>2</sub> standard (Reg. 6, Part B.II). Therefore, no specific Regulation No. 6 SO<sub>2</sub> limitations were included in the renewed Operating Permit.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to reflect the most recent emission factors and emission estimates (based on actual fuel consumption).

## Facility-wide emissions are outlined below:

Pollutant	Potential-to-Emit (tons/yr)	Actual Emissions – 2003 (tons/yr)
PM <sub>10</sub>	76.4	1.5
PM	53.2	1.5
SO <sub>2</sub>	1643.6	0.2
CO	267.5	15.9
NO <sub>x</sub>	891.5	52.9
VOC	17.5	1.0
HAPs	5.9	0.1

PTE based on maximum fuel use and a diesel sulfur content of 0.5%. Actual emissions are based on the APENs submitted May 3, 2004 and represent the year 2003 emissions.

## **NESHAP Applicability**

This facility is considered a True Minor source of Hazardous Air Pollutants (HAPs). No specific NESHAP or MACT requirements apply to the equipment at this plant.

#### NSPS Applicability

None of the boiler New Source Performance Standards (NSPS) apply to the equipment at this plant, since each boiler commenced construction prior to 1971.

# RACT Applicability

Reasonably Available Control Technology (RACT) requirements do not apply since these units were in operation prior to the area being designated nonattainment, or attainment/maintenance for CO (Regulation No. 3, Part B, III.D.2).

#### **Compliance Assurance Monitoring (CAM) Applicability**

George Birdsall Power Plant is not required to obtain a CAM plan since no emission points at this facility use a control device to achieve compliance with an emission limitation or standard to which they are subject and have pre-control emissions that exceed or are equivalent to the major source threshold.

# **BART Applicability**

An analysis was conducted to determine if these units were eligible to the Best Available Retrofit Technology (BART) requirements of 40 CFR, Part 51. The boilers do fall within the BART category of "Fossil-fuel fired steam electric plants of more than 250 million BTU per hour heat input". However, these units were in operation prior to August 7, 1962, and are not BART-eligible.

#### III. Discussion of Modifications Made

Based on the information provided in the renewal application, the following changes have been requested:

- Update the facility contact person.
- Removal of the CAM reference.
- Statement regarding the Regional Haze Rule (BART).
- Clarification of the opacity requirements.
- Update natural gas heat content language.
- Fuel oil tracking clarification.
- Fuel sampling plan clarification.
- Removal of previous condition 5.3.
- Change language regarding the cooling towers.
- Remove language regarding the Special Condition Parameter Profile.
- Removal of annual insignificant activity review.
- Updated fuel monitoring plan.

# **Source Requested Modifications**

The permit contact information has been updated.

The CAM plan reference in the permit is standard language and will remain in the permit. No CAM plans are required as explained above.

A statement regarding BART has been added to this Technical Review Document.

The Division has modified the opacity monitoring requirements when burning fuel oil to be more consistent with other recently issued operating permits and to more clearly and directly monitor opacity. The previous language was difficult to follow and required:

- One opacity observation performed within 60 minutes of ignition, unless hot start-up is initiated within 1 hour of a boiler trip.
- One opacity observation performed for each calendar day that a boiler is operated in the start-up mode.
- One opacity observation performed the 1<sup>st</sup> calendar day after the calendar day of start-up completion.
- One opacity observation performed within 60 minutes of the

- commencement of the special condition mode.
- One opacity observation performed any day that contemporaneous firing of natural gas and fuel oil exceeds 8 hours in any 24 hours.

The plant must startup using natural gas and typically utilizes contemporaneous firing of natural gas and fuel oil to conduct annual testing of the fuel oil system. A review of recent Division inspection reports shows no recent history of opacity violations. The Division will now require annual opacity observations on each boiler when fueled with fuel oil. Another opacity observation is required when any boiler operates using fuel oil for more than 250 hours in any calendar year. Additional opacity readings are required when the boilers are operated using fuel oil under certain operational conditions (e.g. start-up). CSU informed the Division that the boilers will likely never operate using fuel oil under any of these conditions, and asked the Division to remove the 30% opacity limit and opacity requirements. The 30% opacity language is part of the APCD regulations and will remain in the permit. CSU should document annually if none of the operational conditions occurred while firing fuel oil, and then no opacity readings will be required to show compliance with the 30% limitation. The opacity requirements are now located under Section II.2 and II.4.

The Division has re-phrased the natural gas heat content conditions as requested.

The Division has clarified the permit tables to explain that fuel usage is tracked monthly and emissions calculated annually.

The Division has clarified the permit to explain that the Fuel Sampling/Analysis Plan should be followed. Any requested revisions to the plan should be submitted to the Division for approval, and the approved plan should be kept on site. The fuel sampling plan is no longer included in the permit appendix.

The Division has removed the requirement to conduct an inspection of the cooling towers for opacity. These units typically have no opacity and the Division does not anticipate any opacity issues. In the absence of credible evidence to the contrary, compliance with the opacity limit shall be presumed based on the type of materials used and the method of operation.

The Division has removed the language regarding the Special Condition Parameter Profile as requested. This profile had previously explained startup and shutdown durations, and fuel use associated with various operating conditions. This is not typically included in a permit and the Division agreed to remove it.

The Division has removed the condition (previous Condition 8) requiring a formal annual analysis of all insignificant activities to determine compliance with all requirements. A formal review and report is not typically required of sources. Colorado Springs Utilities should review insignificant activities and update the list

contained in Appendix A during each renewal period. The Division does not require the list to be updated every time insignificant activities change.

# **Other Modifications**

In addition to the requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, included comments made by EPA on other Operating Permits, as well as corrected errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

These changes are as follows:

## Page following the cover page

Note that the source could request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

 Added language specifying that the semi-annual reports and compliance certifications are due in the Division's office and that postmarks cannot be used for purposes of determining the timely receipt of such reports/certifications.

#### Section I - General Activities and Summary

- Conditions 13 and 17 in Condition 1.4 were renumbered to 14 and 18 and Condition 21 in Condition 1.5 was renumbered to 22. The renumbering changes were necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit. In addition, General Conditions 3.d & 3.g (common provisions, affirmative defense) were added as a State-only requirement.
- Some changes to the Condition numbering has occurred to be consistent with other recently issued permits.
- Previous condition 1.6 regarding the non-applicability of the Acid Rain provisions has been removed. Non-applicability has been noted in this technical review document and it is not necessary to note it in the permit.
- Minor language changes were made to Condition 3.1 to more appropriately reflect the status of the source with respect to PSD.

#### Section II - Specific Permit Terms

• The tables and permit language in Section II have received format and

- language changes to match recently issued permits. This has not altered the requirements of the specific conditions.
- The Division has removed the "Design" column from the tables. This information is more appropriate to list in this technical review document. See the PTE on page 3 for this information.
- The SO<sub>2</sub> emission factor in Summary Table 2 has been corrected from 157S to 142S. This is the corrected factor in AP-42.
- Condition 2.5 has been modified to reflect the current requirements of Regulation No. 1. The requirement was modified in a 2001 change to Regulation No. 1. Reports are now due each calendar half, not each quarter.
- Condition 2.8 & 4. 8 have been added to the permit to formally require hours of operation record keeping on the use of fuel oils.
- Summary Table 5 has been added to make the cooling tower requirements more clear.
- Previous Condition 6 has been removed. The approved plans have been attached to the permit in the Appendices.
- As noted previously, the opacity requirements (previous Condition 7) have been moved to the appropriate emission unit conditions.
- Previous Condition 9 regarding reporting has been removed. Reporting submittal deadlines are outlined in other areas of the permit.

# Section III - Permit Shield

• The citation in the permit shield was corrected.

#### Section IV - General Conditions

- Added language from the Common Provisions (new condition 3). With this change the reference to "21.d" in Condition 20 (prompt deviation reporting) will be changed to "22.d", since the general conditions are renumbered with the addition of the Common Provisions.
- The upset language in Condition 3.d has been replaced with the affirmative defense provision for excess emission during malfunctions language.
- Removed the upset and breakdown provisions from Condition 4

(emergency provisions) since they are included in the Common Provisions.

- Condition 5 "upset" was replaced with "malfunction".
- The definition of "prompt" has changed. Condition 21 has been updated.
- The language in 22d has been modified slightly.

# **Appendices**

- Appendix B & C have been updated to the current version (02/20/2007).
   The requirement to determine if data was continuous has been removed from Appendix C.
- The table in Appendix F was cleared.
- The mailing address of EPA was updated in Appendix D.